Color-Keyed®

Compression Connector System

Thomas&Betts

Step One Preparing the Cable

Wire Stripper shown is Part No. BCS8-40.

Strip the insulation carefully to avoid nicking or cutting conductors (wire brush if required).

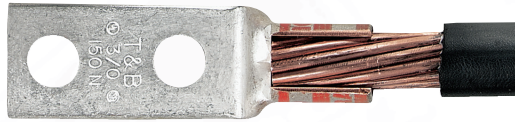
Strands Cut

Nicked Strands

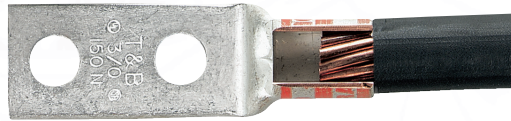
Good Strip

Strip the insulation to the proper length so that conductors can be fully inserted into the connector barrel.

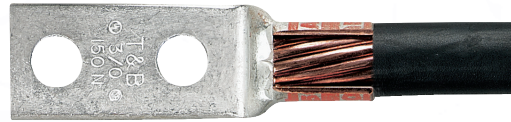
Strip Length Too Long



Strip Length Too Short



Strip Length Just Right



Step Two

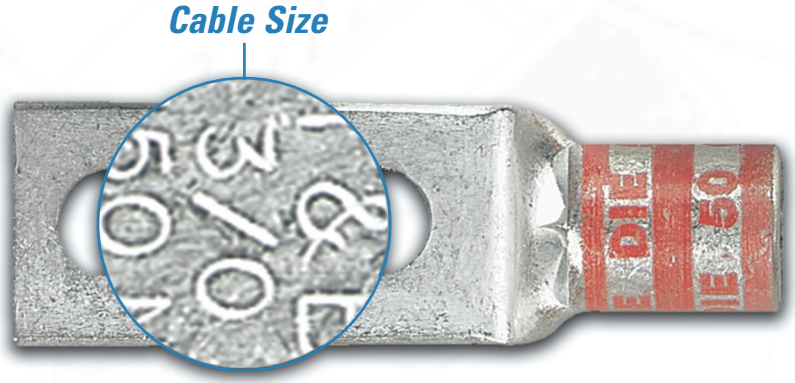
Determining the Proper Connector

Determine the proper Color-Keyed® Connector for the cable size being used.

- *Connectors marked with just cable size or CU should be used on copper conductors only.*
- *Connectors marked "AL9"* with the cable size should be used on aluminum conductors only.*
- *Connectors marked "AL9CU" with the cable size may be used on the aluminum or copper conductors.*

** Aluminum lugs with a "9" indicate 90°C rating.*

Connectors are marked to show cable size.



Step Three Choosing Tool and Proper Die

Battpac™ Tool TBM62BSCR shown.

Select the proper installing die and appropriate tool.

T&B Connectors have colored bands or colored dots that correspond to color markings on the dies.

Connectors and dies also have a die code number marked or stamped on them. Dies have a code number engraved in the crimp surface

Colored Codes

Die Code Marking

Colored Bands

Die Code Engraving

Colored Strip

Step Four Installation and Inspection

Battpac™ Battery Powered Compression TBM62BSCR shown.

Locate tool with correct die in proper position on connector and activate tool.

T&B Connectors are banded by colored stripes or engraving to indicate location of die on connector for compression.

Copper

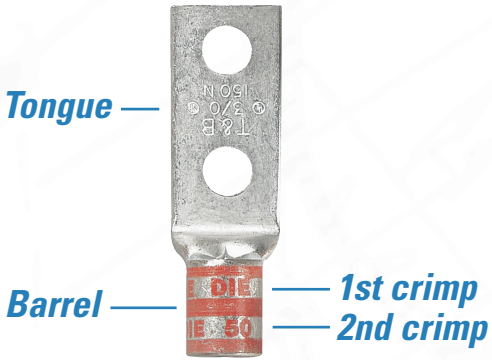
Die located BETWEEN bands

Aluminum

Die located ON Bands

When making multiple crimps, make the first crimp nearest the tongue and work towards the barrel end.

Die location for compression



When properly crimped, the die code number will be embossed on the connector for easy inspection to determine if correct die and connector combination were used.

Thomas & Betts uses "full-width" and "half-width" dies dependent on connector size and tool used. "Half-width" dies are marked with the letter "H" after the die code number.

Refer to the instruction sheet supplied with the connectors for information regarding strip length, die selection and number of compressions required.

Tool and Die Selection Chart for Power Connectors

Connector Size			Color Keyed Die Groove	TBM25S	TBM4S	TBM8-750/-1	TBM-8 / 8S	TBM-5 / 5S	TBM6 / 6S (25000)		13642M (13400) Hydraulic Head		TBM12 Hydraulic Head	
Copper	Flex/24	AL/CU					TBM8 Die Cat. No.	TBM5 Die Cat. No.	Cat. No. Upper Die	Cat. No. Lower Die	Die Cat. No.	Die Code No.	Die Cat. No.	Die Code No.
8 AWG	37/24	10AWG	Red						13475	13477	11732	21	TBM12D-1	21
6 AWG	61/24	8AWG	Blue				order	order	13475	13477	11733	24	TBM12D-1	24
4 AWG	91/24	6AWG	Gray				13461	13454	13472	13476	11734	29	TBM12D-2	29
2 AWG	125/24		Brown						13474	13477	11735	33	TBM12D-2	33
1 AWG	150/24	4AWG	Green	C-TAPS ONLY					13474	13477	11736	37	TBM12D-3	37
1/0	225/24	2AWG	Pink				order	order	13475	13477	11737	42	TBM12D-3	42
2/0	275/24		Black				13462	13455	13474	13477	11738	45	TBM12D-4	45
3/0	325/24		Orange						13474	13477	11739	50	TBM12D-4	50
4/0	450/24		Purple				order	order	13475	13477	11740	54	TBM12D-5	54
250MCM	550/24		Yellow				13463	13456	13473	13476	11771	62	TBM12D-5	62
		1AWG	Gold						13474	13477	11738	45	TBM12D-4	45
		1/0	Tan				order	order	13474	13477	11739	50	TBM12D-4	50
		2/0	Olive				13464	13457	13475	13477	11740	54	TBM12D-5	54
		3/0	Ruby						13473	13476	11741	60	TBM12D-5	60
300MCM		4/0	White				13465		13473	13476	11742	66H	TBM12D-5	66H
350MCM	775/24 (short)	250MCM	Red				13466	13458	13472	13476	11743	71H	TBM12D-4	71H
400MCM	775/24 (long)	300MCM	Blue				13467	4/0 only	13472	13476	11744	76H	TBM12D-4	76H
	925/24*		N/A						13479	13476	11745	80H		
			N/A											
500MCM		350MCM	Brown				13468		13478	13478	11746-TB	87H	TBM12D-3	87H
600MCM	1100/24	400MCM	Green								11747	94H	TBM12D-3	94H
			Green											94H
	1325/24**		Pink											
700MCM		500MCM	Pink								11748	99H	TBM12D-2	99H
750MCM		650MCM	Black								11749	106H	TBM12D-2	106H
800MCM			Orange								11750	107H		
		700MCM	Purple								11751	112H	TBM12D-1	112H
900MCM	1925/24	750MCM	Yellow								11753	115H	TBM12D-1	115H
1000MCM		800MCM												
		1000MCM												

*Standard barrel only. Long barrel requires Brown 87H **Standard barrel only. Long barrel requires Black 106H

Tool and Die Selection Chart for Power Connectors

Connector Size			Color Keyed Die Groove	TBM6BSCR/6H		TBM62BSCR		TBM14BSCR / 14M / 13100A		TBM15BSCR / 15I***		21940 (40 TON)	
Code Copper	Flex/24	AL/CU		Die Cat. No.	Die Code No.	Die Cat. No.	Die Code No.	Die Cat. No.	Die Code No.	Die Cat. No.	Die Code No.	Die Cat. No.	Die Code No.
8 AWG	37/24	10AWG	Red	6TON21	21	TBM6221	21	15520	21	15520	21		
6 AWG	61/24	8AWG	Blue	6TON24	24	TBM6224	24	15522	24	15522	24		
4 AWG	91/24	6AWG	Gray	6TON29	29	TBM6229	29	15527-CK	29	15527-CK	29	11401	29
2 AWG	125/24		Brown	6TON33	33	TBM6233	33	15528	33	15528	33	11402	33
1 AWG	150/24	4AWG	Green	6TON37	37	TBM6237	37	15513-CK	37	15513-CK	37	11333	37
1/0	225/24	2AWG	Pink	6TON42	42	TBM6242	42	15508	42	15508	42H	11334	42
2/0	275/24		Black	6TON45	45	TBM6245	45	15526	45	15526	45	11405	45
3/0	325/24		Orange	6TON50	50	TBM6250	50	15530	50	15530	50	11406	50
4/0	450/24		Purple	6TON54	54	TBM6254	54	15511	54	15511	54H	11407	54H
250MCM	550/24		Yellow	6TON62	62	TBM6262	62	15510-CK	62	15510-CK	62	297-31669-7	62
		1AWG	Gold	6TON45	45	TBM6245	45	15526	45	15526	45	11405	45
		1/0	Tan	6TON50	50	TBM6250	50	15530	50	15530	50	11406	50
		2/0	Olive	6TON54	54	TBM6254	54	15511	54	15511	54H	11407	54
		3/0	Ruby	6TON60	60	TBM6260	60	15532-CK	60	15532-CK	60	11408	60
300MCM		4/0	White	6TON66	66H	TBM6266	66	15534	66H	15534	66H	11409	66
350MCM	775/24 (short)	250MCM	Red	6TON71	71H	TBM6271	71	15514-CK	71H	15514-CK	71H	11363	71
400MCM	775/24 (long)	300MCM	Blue	6TON76	76H	TBM6276	76	15512	76H	15512	76H	11410	76
	925/24*		N/A	6TON80	80H	TBM6280	80	15517	80H	15517	80H		
			N/A							15606	80		
500MCM		350MCM	Brown	6TON87	87H	TBM6287	87	15506	87H	15506	87H	11423	87
600MCM	1100/24	400MCM	Green	6TON94	94H					15611	94H	11364	94
			Green					15536-CK	94H	15536-CK	94H		
	1325/24**		Pink										
700MCM		500MCM	Pink		99H			15505	99H	15505	99H	11424	99
750MCM		650MCM	Black		106H			15515-CK	106H	15515-CK	106H	74506	106
800MCM			Orange		107H					15608	107H	11425	107
		700MCM	Purple		112H					15609	112H	11426	112
900MCM	1925/24	750MCM	Yellow		115H			15504	115H	15504	115H	11308	115
1000MCM		800MCM								15603	125H	11416	125
		1000MCM								15602	140H	11418	140
										15601	150H	11419	150

*Standard barrel only. Long barrel requires Brown 87H **Standard barrel only. Long barrel requires Black 106H ***15500 Series dies require 15500-TB adapter. 15500F for full size die to fit TBM151 without adapter

Tool and Die Selection Chart for Copper H-Taps

Conductor Size Code Cable (Flex Cable)				Installation							
Main	Branch 1	Branch 2	Branch 3	H-Tap	Color	Die	Tool	# Of Crimps	Die Embossing	Strip Length	Insulating Cover
8-14 (8-14)	8-14 (8-14)	-	-	CHT814-10	Green	15CA37RCH*	Group 1	1	37R	1/2"	HTC2S
2-6 Str/Sol(2-8)	2-6 Str / Sol (2-8)	8-14 (8-14)	8-14 (8-14)	CHT214-9	Brown	15CA71RCH*	Group1	1	71R	7/8"	HTC40
250-2 (4/0-2)	8-14 (8-14)	8-14 (8-14)	-	CHT250214-8	Purple	15CA80RCH*	Group 2	1	80R	1 1/8"	
250-2 (4/0-2)	2-6 Str / Sol (2-8)	8-14 (8-14)	-	CHT25014-7	Purple	15CA80RCH*	Group 2	1	80R	1 1/8"	
250-2 (4/0-2)	250-2 (4/0-2)	-	-	CHT2502-6	Purple	15CA80RCH*	Group 2	1	80R	13/16"	
500-4/0 (350-4/0)	250-1/0 (4/0-1/0)	1 Str 2-6 (1-8)	8-14 (8-14)	CHT50010-5	Brown	15612CH	Group 2	2	N	1 1/8"	HTC500
500-4/0 (350-4/0)	500-4/0 (350-4/0)	-	-	CHT50040-4	Brown	15612CH	Group 2	2	N	1 1/8"	
750-350 (550-500)	4/0-1/0 (250-1/0)	1 Str 2-6 (1-8)	2-14 (2-14)	CHT75010-3	Yellow	15620CH	Group 2	1	Z	1 1/8"	
750-350 (550-500)	750-350 (550-350)	-	-	CHT750350-2	Yellow	15620CH	Group 2	1	Z	1 3/8"	
750 (750-500)	350-4/0 STR & FLEX	-	-	CHT75040-11	Yellow	15620CH	Group 2	1	Z	1 1/8"	
(750-500) (750)	(750-500) (350)	-	-	CHT750350-1F	White	15620CHF	Group 2	1	F	1 1/8"	HTC1000

*Requires optional adapter 15500-TB when used with hydraulic head TBM15I and TBM15BSCR

Group 1 = TBM15I, TBM15BSCR, TBM14, TBM14BSCR, 13100A

Group 2 = TBM15I, TBM15BSCR

Tool and Die Chart for Standard C-Taps

Code Wire Comb. Cir. Area Range				Group 1	TBM62BSCR	TBM8-750	Group 2	Group 3	Insulation Choice	
Main	Branch 1	C-Tap	Color	Die	Die	Die			Adhesive Pad	Shrink Tubing
12 14	14 16	54705	Red	6TON21	TBM6221	-	Accommodates this Range	Accommodates this Entire Range	AC5X3	HS12-6
10 8	10 12	54710	Blue	6TON24	TBM6224					
6 8	10,12 8,10,12	54715	Gray	6TON29	TBM6229	-				HS6-1
4 OR 5 6	8, 10, 12 6, 8	54720	Brown	6TON33	TBM6233	TBM8-750C20				
3 4 OR 5	6, 8, 10, 12 *** 6, 5	54725	Green	6TON37	TBM6237	TBM8-750C2530				
2 3 4	6, 8, 10, 12 5 3	54730	Pink	6TON42	TBM6242	TBM8-750C2530				
1 2 3	4, 5, 6, 8, 10, 12 4, 5 3, 4	54735	Black	6TON45	TBM6245	TBM8-750C3540				HS4-30
1/0 1 2	4, 5, 6, 8, 10, 12 3, 4 2, 3	54740	Orange	6TON50	TBM6250	TBM8-750C3540				
2/0 1/0 1	3, 4, 5, 6, 8, 10, 12 2, 3 1, 3	54745	Purple	6TON54	TBM6254	TBM8-750C4550				
3/0 2/0 1/0	2, 3, 4, 5, 6, 8, 10, 12 1, 2 1/0, 1	54750	Yellow	6TON62	TBM6262	TBM8-750C4550				

*** When using 3 AWG on main and 12 AWG on branch with smart tools and dies, 12 AWG wire must be doubled (hair-pinned) and placed on branch for crimping
Group 1 = TBM6H / TBM6BSCR
Group 2 = TBM25S, TBM21E and require 2 compressions within each crimp area
Group 3 = TBM5 / 5S, TBM6 / 6S, TBM8/8S, TBM6H and require 1 compression within each crimp area

Tool and Die Chart for Large C-Taps

Code Copper Range				Regular Tools				Smart Tool			Insulation Choice	
Main	Branch 1	C-Tap *	Color	Tools	Dies	Die Code	# Of Crimps***	Tools	Die	# Of Crimps	Adhesive Pad	Shrink Tubing
1	1	54755	Blue	13642M TBM12 TBM14M TBM15I 13100A TBM14BSCR TBM15BSCR	11744 TBM12D-4	76H	2	TBM8-750 TBM8-750M-1	TBM8-750CL	1	AC5X7	HS4-30
1/0	1/0-2											
2/0	2/0-4				15512 **	76	1					
3/0	1/0-6											
4/0	1-8											
2/0	2/0-1	54760	Brown		11746-TB TBM12D-3 15506 **	87H	2			2		
3/0	3/0-3											
4/0	4/0-4											
250	1/0-8											
2/0	2/0-1	54765	Pink		11748 TBM12D-2 15505 **	99H						
3/0	3/0-2											
4/0	4/0-4											
250	3/0-6											
300	2/0-8											
4/0	4/0-2/0	54770	Black		11749 TBM12D-2 15515-CK **	106H						HS40-400
250	250-1											
300	4/0-4											
350	3/0-6											
250	250	54775	Yellow		11753 TBM12D-1 15504 **	115H						
300	300-3/0											
350	350-1/0											
400	300-2											
450	250-4											
500	250-6****											
350	350-4/0	54780	White	TBM15I TBM15BSCR	15603	125H		N/A				HS500-1000
400	400-2/0											
450	450-1											
500	500-2											
750	4/0-6	54785	N/A				3					
500	4/0-1/0						4					
750/500	750-4/0	54790										

*For tin plate finish add "TP" to Cat. No. listed (Example: 54755TP) **Use with adapter Cat. No. 15500-TB (Note: If 15500 dies have a suffix "F", they are full sized dies and can be used with the TBM15I without an adapter.) ***When using compact copper cable, apply additional overlapping crimps so that C-tap is crimped from end to end. 11000 series dies go with 13642M tool, TBM12D-# series dies go with TBM12 tool, and 15500 series dies go with TBM14M/14BSCR/13100A/TBM15I/15BSCR ****#6 AWG branch must be doubled

Conductor Properties

Size (AWG or kcmil)	Area		Conductors							Direct-Current Resistance at 75°C (167°F)					
			Stranding			Overall				Copper				Aluminum	
				Diameter		Diameter		Area		Uncoated		Coated			
	mm2	Circular mils	Quantity	mm	in.	mm	in.	mm2	in.2	ohm/km	ohm/kFT	ohm/km	ohm/kFT	ohm/km	ohm/kFT
18	0.823	1620	1	—	—	1.02	0.040	0.823	0.001	25.5	7.77	26.5	8.08	42.0	12.8
18	0.823	1620	7	0.39	0.015	1.16	0.046	1.06	0.002	26.1	7.95	27.7	8.45	42.8	13.1
16	1.31	2580	1	—	—	1.29	0.051	1.31	0.002	16.0	4.89	16.7	5.08	26.4	8.05
16	1.31	2580	7	0.49	0.019	1.46	0.058	1.68	0.003	16.4	4.99	17.3	5.29	26.9	8.21
14	2.08	4110	1	—	—	1.63	0.064	2.08	0.003	10.1	3.07	10.4	3.19	16.6	5.06
14	2.08	4110	7	0.62	0.024	1.85	0.073	2.68	0.004	10.3	3.14	10.7	3.26	16.9	5.17
12	3.31	6530	1	—	—	2.05	0.081	3.31	0.005	6.34	1.93	6.57	2.01	10.45	3.18
12	3.31	6530	7	0.78	0.030	2.32	0.092	4.25	0.006	6.50	1.98	6.73	2.05	10.69	3.25
10	5.261	10380	1	—	—	2.588	0.102	5.26	0.008	3.984	1.21	4.148	1.26	6.561	2.00
10	5.261	10380	7	0.98	0.038	2.95	0.116	6.76	0.011	4.070	1.24	4.226	1.29	6.679	2.04
8	8.367	16510	1	—	—	3.264	0.128	8.37	0.013	2.506	0.764	2.579	0.786	4.125	1.26
8	8.367	16510	7	1.23	0.049	3.71	0.146	10.76	0.017	2.551	0.778	2.653	0.809	4.204	1.28
6	13.30	26240	7	1.56	0.061	4.67	0.184	17.09	0.027	1.608	0.491	1.671	0.510	2.652	0.808
4	21.15	41740	7	1.96	0.077	5.89	0.232	27.19	0.042	1.010	0.308	1.053	0.321	1.666	0.508
3	26.67	52620	7	2.20	0.087	6.60	0.260	34.28	0.053	0.802	0.245	0.833	0.254	1.320	0.403
2	33.62	66360	7	2.47	0.097	7.42	0.292	43.23	0.067	0.634	0.194	0.661	0.201	1.045	0.319
1	42.41	83690	19	1.69	0.066	8.43	0.332	55.80	0.087	0.505	0.154	0.524	0.160	0.829	0.253

Conductor Properties (Continued)

Size (AWG or kcmil)	Area		Conductors: Stranding			Conductors: Overall				Direct-Current Resistance at 75°C (167°F): Copper				Aluminum	
				Diameter		Diameter		Area		Uncoated		Coated			
	mm2	Circular mils	Quantity	mm	in.	mm	in.	mm2	in.2	ohm/km	ohm/kFT	ohm/km	ohm/kFT	ohm/km	ohm/kFT
1/0	53.49	105600	19	1.89	0.074	9.45	0.372	70.41	0.109	0.399	0.122	0.415	0.127	0.660	0.201
2/0	67.43	133100	19	2.13	0.084	10.62	0.418	88.74	0.137	0.3170	0.0967	0.329	0.101	0.523	0.159
3/0	85.01	167800	19	2.39	0.094	11.94	0.470	111.9	0.173	0.2512	0.0766	0.2610	0.0797	0.413	0.126
4/0	107.2	211600	19	2.68	0.106	13.41	0.528	141.1	0.219	0.1996	0.0608	0.2050	0.0626	0.328	0.100
250		—	37	2.09	0.082	14.61	0.575	168	0.260	0.1687	0.0515	0.1753	0.0535	0.2778	0.0847
300		—	37	2.29	0.090	16.00	0.630	201	0.312	0.1409	0.0429	0.1463	0.0446	0.2318	0.0707
350		—	37	2.47	0.097	17.30	0.681	235	0.364	0.1205	0.0367	0.1252	0.0382	0.1984	0.0605
400		—	37	2.64	0.104	18.49	0.728	268	0.416	0.1053	0.0321	0.1084	0.0331	0.1737	0.0529
500		—	37	2.95	0.116	20.65	0.813	336	0.519	0.0845	0.0258	0.0869	0.0265	0.1391	0.0424
600		—	61	2.52	0.099	22.68	0.893	404	0.626	0.0704	0.0214	0.0732	0.0223	0.1159	0.0353
700		—	61	2.72	0.107	24.49	0.964	471	0.730	0.0603	0.0184	0.0622	0.0189	0.0994	0.0303
750		—	61	2.82	0.111	25.35	0.998	505	0.782	0.0563	0.0171	0.0579	0.0176	0.0927	0.0282
800		—	61	2.91	0.114	26.16	1.030	538	0.834	0.0528	0.0161	0.0544	0.0166	0.0868	0.0265
900		—	61	3.09	0.122	27.79	1.094	606	0.940	0.0470	0.0143	0.0481	0.0147	0.0770	0.0235
1000		—	61	3.25	0.128	29.26	1.152	673	1.042	0.0423	0.0129	0.0434	0.0132	0.0695	0.0212

FPN: The construction information is per NEMA WC8-1992 or ANSI/UL 1581-1998. The resistance is calculated per National Bureau of Standards Handbook 100, dated 1966, and Handbook 109, dated 1972.

Table B.310.1 Ampacities of Two or Three Insulated Conductors, Rated 0 Through 2000 Volts, Within an Overall Covering (Multiconductor Cable), in Raceway in Free Air Based on Ambient Air Temperature of 30°C (86°F)

Temperature Rating of Conductor. (See Table 310.13.)

Size (AWG or kcmil)	60°C (140°F)	75°C (167°F)	90°C (194°F)	60°C (140°F)	75°C (167°F)	90°C (194°F)	Size (AWG or kcmil)
	Types TW, UF	Types RHW, THHW, THW, THWN, XHHW, ZW	Types THHN, THHW, THW-2, THWN-2, RHH, RHW-2, USE-2, XHHN, XHHW-2, ZW-2	TypeTW	Types RHW, THHW, THW, THWN, XHHW	Types THHN, THHW, THW-2, THWN-2, RHH, RHW-2, USE-2, XHHW, XHHW-2, ZW-2	
		COPPER		ALUMINUM OR COPPER-CLAD ALUMINUM			
14	16*	18*	21*				14
12	20*	24*	27*	16*	18*	21*	12
10	27*	33*	36*	21*	25*	28*	10
8	36	43	48	28	33	37	8
6	48	58	65	38	45	51	6
4	66	79	89	51	61	69	4
3	76	90	102	59	70	79	3
2	88	105	119	69	83	93	2
1	102	121	137	80	95	106	1
1/0	121	145	163	94	113	127	1/0
2/0	138	166	186	108	129	146	2/0
3/0	158	189	214	124	147	167	3/0
4/0	187	223	253	147	176	197	4/0
250	205	245	276	160	192	217	250
300	234	281	317	185	221	250	300
350	255	305	345	202	242	273	350
400	274	328	371	218	261	295	400
500	315	378	427	254	303	342	500
600	343	413	468	279	335	378	600
700	376	452	514	310	371	420	700
750	387	466	529	321	384	435	750
800	397	479	543	331	397	450	800
900	415	500	570	350	421	477	900
1000	448	542	617	382	460	521	1000

Correction Factors

Ambient Temp. (°C)	For ambient temperatures other than 30°C (86°F), multiply the ampacities shown above by the appropriate factor shown below.						Ambient Temp. (°F)
21–25	1.08	1.05	1.04	1.08	1.05	1.04	70–77
26–30	1.00	1.00	1.00	1.00	1.00	1.00	79–86
31–35	0.91	0.94	0.96	0.91	0.94	0.96	88–95
36–40	0.82	0.88	0.91	0.82	0.88	0.91	97–104
41–45	0.71	0.82	0.87	0.71	0.82	0.87	106–113
46–50	0.58	0.75	0.82	0.58	0.75	0.82	115–122
51–55	0.41	0.67	0.76	0.41	0.67	0.76	124–131
56–60	—	0.58	0.71	—	0.58	0.71	133–140
61–70	—	0.33	0.58	—	0.33	0.58	142–158
71–80	—	—	0.41	—	—	0.41	160–176

*Unless otherwise specifically permitted elsewhere in this Code, the overcurrent protection for these conductor types shall not exceed 15 amperes for 14 AWG, 20 amperes for 12 AWG, and 30 amperes for 10 AWG copper; or 15 amperes for 12 AWG and 25 amperes for 10 AWG aluminum and copper-clad aluminum.

SOURCE: NEC2002

Conduit and Tubing Fill Tables for Conductors and Fixture Wires of the Same Size

Table C1 Maximum Number of Conductors or Fixture Wires in Electrical Metallic Tubing (EMT) (Based on Table 1, Chapter 9)

CONDUCTORS

	Conductor	Metric Designator (Trade Size)									
Type	Size (AWG/kcmil)	16 (½)	21 (¾)	27 (1)	35 (1¼)	41 (1½)	53 (2)	63 (2½)	78 (3)	91 (3½)	103 (4)
RHH, RHW, RHW-2	14	4	7	11	20	27	46	80	120	157	201
	12	3	6	9	17	23	38	66	100	131	167
	10	2	5	8	13	18	30	53	81	105	135
	8	1	2	4	7	9	16	28	42	55	70
	6	1	1	3	5	8	13	22	34	44	56
	4	1	1	2	4	6	10	17	26	34	44
	3	1	1	1	4	5	9	15	23	30	38
	2	1	1	1	3	4	7	13	20	26	33
	1	0	1	1	1	3	5	9	13	17	22
	1/0	0	1	1	1	2	4	7	11	15	19
	2/0	0	1	1	1	2	4	6	10	13	17
	3/0	0	0	1	1	1	3	5	8	11	14
	4/0	0	0	1	1	1	3	5	7	9	12
	250	0	0	0	1	1	1	3	5	7	9
	300	0	0	0	1	1	1	3	5	6	8
	350	0	0	0	1	1	1	3	4	6	7
	400	0	0	0	1	1	1	2	4	5	7
	500	0	0	0	0	1	1	2	3	4	6
	600	0	0	0	0	1	1	1	3	4	5
	700	0	0	0	0	0	1	1	2	3	4
	750	0	0	0	0	0	1	1	2	3	4
	800	0	0	0	0	0	1	1	2	3	4
	900	0	0	0	0	0	1	1	1	3	3
	1000	0	0	0	0	0	1	1	1	2	3
TW, THHW, THW, THW-2	14	8	15	25	43	58	96	168	254	332	424
	12	6	11	19	33	45	74	129	195	255	326
	10	5	8	14	24	33	55	96	145	190	243
	8	2	5	8	13	18	30	53	81	105	135
RHH*, RHW*, RHW-2*	14	6	10	6	28	39	64	112	169	221	282
	12	4	8	13	23	31	51	90	136	177	227
	10	3	6	10	18	24	40	70	106	138	177
	8	1	4	6	10	14	24	42	63	83	106

SOURCE: NEC2002

Conduit and Tubing Fill Tables for Conductors and Fixture Wires of the Same Size

Table C1 (Continued)

CONDUCTORS

Conductor		Metric Designator (Trade Size)									
Type	Size (AWG/kcmil)	16 (½)	21 (¾)	27 (1)	35 (1¼)	41 (1½)	53 (2)	63 (2½)	78 (3)	91 (3½)	103 (4)
RHH*, RHW*, RHW-2*, TW, THW, THHW, THW-2	6	1	3	4	8	11	18	32	48	63	81
	4	1	1	3	6	8	13	24	36	47	60
	3	1	1	3	5	7	12	20	31	40	52
	2	1	1	2	4	6	10	17	26	34	44
	1	1	1	1	3	4	7	12	18	24	31
	1/0	0	1	1	2	3	6	10	16	20	26
	2/0	0	1	1	1	3	5	9	13	17	22
	3/0	0	1	1	1	2	4	7	11	15	19
	4/0	0	0	1	1	1	3	6	9	12	16
	250	0	0	1	1	1	3	5	7	10	13
	300	0	0	1	1	1	2	4	6	8	11
	350	0	0	0	1	1	1	4	6	7	10
	400	0	0	0	1	1	1	3	5	7	9
	500	0	0	0	1	1	1	3	4	6	7
	600	0	0	0	1	1	1	2	3	4	6
	700	0	0	0	0	1	1	1	3	4	5
	750	0	0	0	0	1	1	1	3	4	5
	800	0	0	0	0	1	1	1	3	3	5
	900	0	0	0	0	0	1	1	2	3	4
	1000	0	0	0	0	0	1	1	2	3	4
THHN, THWN, THWN-2	14	12	22	35	61	84	138	241	364	476	608
	12	9	16	26	45	61	101	176	266	347	443
	10	5	10	16	28	38	63	111	167	219	279
	8	3	6	9	16	22	36	64	96	126	161
	6	2	4	7	12	16	26	46	69	91	116
	4	1	2	4	7	10	16	28	43	56	71
	3	1	1	3	6	8	13	24	36	47	60
	2	1	1	3	5	7	11	20	30	40	51
	1	1	1	1	4	5	8	15	22	29	37
	1/0	1	1	1	3	4	7	12	19	25	32
	2/0	0	1	1	2	3	6	10	16	20	26
	3/0	0	1	1	1	3	5	8	13	17	22
	4/0	0	1	1	1	2	4	7	11	14	18
	250	0	0	1	1	1	3	6	9	11	15
	300	0	0	1	1	1	3	5	7	10	13
	350	0	0	1	1	1	2	4	6	9	11
	400	0	0	0	1	1	1	4	6	8	10
	500	0	0	0	1	1	1	3	5	6	8
	600	0	0	0	1	1	1	2	4	5	7
	700	0	0	0	1	1	1	2	3	4	6
	750	0	0	0	0	1	1	1	3	4	5
	800	0	0	0	0	1	1	1	3	4	5
	900	0	0	0	0	1	1	1	3	3	4
	1000	0	0	0	0	1	1	1	2	3	4

SOURCE: NEC2002

Table C4 Maximum Number of Conductors or Fixture Wires in Intermediate Metal Conduit (IMC) (Based on Table 1, Chapter 9)

CONDUCTORS											
Conductor		Metric Designator (Trade Size)									
Type	Size (AWG/kcmil)	16 (½)	21 (¾)	27 (1)	35 (1¼)	41 (1½)	53 (2)	63 (2½)	78 (3)	91 (3½)	103 (4)
RHH, RHW, RHW-2	14	4	8	13	22	30	49	70	108	144	186
	12	4	6	11	18	25	41	58	89	120	154
RHH, RHW, RHW-2	10	3	5	8	15	20	33	47	72	97	124
	8	1	3	4	8	10	17	24	38	50	65
	6	1	1	3	6	8	14	19	30	40	52
	4	1	1	3	5	6	11	15	23	31	41
	3	1	1	2	4	6	9	13	21	28	36
	2	1	1	1	3	5	8	11	18	24	31
	1	0	1	1	2	3	5	7	12	16	20
	1/0	0	1	1	1	3	4	6	10	14	18
	2/0	0	1	1	1	2	4	6	9	12	15
	3/0	0	0	1	1	1	3	5	7	10	13
	4/0	0	0	1	1	1	3	4	6	9	11
	250	0	0	1	1	1	1	3	5	6	8
	300	0	0	0	1	1	1	3	4	6	7
	350	0	0	0	1	1	1	2	4	5	7
	400	0	0	0	1	1	1	2	3	5	6
	500	0	0	0	1	1	1	1	3	4	5
	600	0	0	0	0	1	1	1	2	3	4
	700	0	0	0	0	1	1	1	2	3	4
	750	0	0	0	0	1	1	1	1	3	4
	800	0	0	0	0	0	1	1	1	3	3
	900	0	0	0	0	0	1	1	1	2	3
	1000	0	0	0	0	0	1	1	1	2	3
	1250	0	0	0	0	0	1	1	1	1	2
	1500	0	0	0	0	0	0	1	1	1	1
	1750	0	0	0	0	0	0	1	1	1	1
	2000	0	0	0	0	0	0	1	1	1	1
TW, THHW, THW, THW-2	14	10	17	27	47	64	104	147	228	304	392
	12	7	13	21	36	49	80	113	175	234	301
	10	5	9	15	27	36	59	84	130	174	224
	8	3	5	8	15	20	33	47	72	97	124
RHH*, RHW*, RHW-2	14	6	11	18	31	42	69	98	151	202	261
RHH*, RHW*, RHW-2*	12	5	9	14	25	34	56	79	122	163	209
	10	4	7	11	19	26	43	61	95	127	163
RHH*, RHW*, RHW-2*	8	2	4	7	12	16	26	37	57	76	98
RHH*, RHW*, RHW-2*,	6	1	3	5	9	12	20	28	43	58	75
	4	1	2	4	6	9	15	21	32	43	56

SOURCE: NEC2002

Table C4 (Continued)

CONDUCTORS

Conductor		Metric Designator (Trade Size)									
Type	Size (AWG/kcmil)	16 (½)	21 (¾)	27 (1)	35 (1¼)	41 (1½)	53 (2)	63 (2½)	78 (3)	91 (3½)	103 (4)
TW, THW, THHW, THW-2	3	1	1	3	6	8	13	18	28	37	48
	2	1	1	3	5	6	11	15	23	31	41
	1	1	1	1	3	4	7	11	16	22	28
	1/0	1	1	1	3	4	6	9	14	19	24
	2/0	0	1	1	2	3	5	8	12	16	20
	3/0	0	1	1	1	3	4	6	10	13	17
	4/0	0	1	1	1	2	4	5	8	11	14
	250	0	0	1	1	1	3	4	7	9	12
	300	0	0	1	1	1	2	4	6	8	10
	350	0	0	1	1	1	2	3	5	7	9
	400	0	0	0	1	1	1	3	4	6	8
	500	0	0	0	1	1	1	2	4	5	7
	600	0	0	0	1	1	1	1	3	4	5
	700	0	0	0	0	1	1	1	3	4	5
	750	0	0	0	0	1	1	1	2	3	4
	800	0	0	0	0	1	1	1	2	3	4
	900	0	0	0	0	1	1	1	2	3	4
	1000	0	0	0	0	0	1	1	1	3	3
THHN, THWN, THWN-2	14	14	24	39	68	91	149	211	326	436	562
	12	10	17	29	49	67	109	154	238	318	410
	10	6	11	18	31	42	68	97	150	200	258
	8	3	6	10	18	24	39	56	86	115	149
	6	2	4	7	13	17	28	40	62	83	107
	4	1	3	4	8	10	17	25	38	51	66
	3	1	2	4	6	9	15	21	32	43	56
	2	1	1	3	5	7	12	17	27	36	47
	1	1	1	2	4	5	9	13	20	27	35
	1/0	1	1	1	3	4	8	11	17	23	29
	2/0	1	1	1	3	4	6	9	14	19	24
	3/0	0	1	1	2	3	5	7	12	16	20
	4/0	0	1	1	1	2	4	6	9	13	17
	250	0	0	1	1	1	3	5	8	10	13
	300	0	0	1	1	1	3	4	7	9	12
	350	0	0	1	1	1	2	4	6	8	10
	400	0	0	1	1	1	2	3	5	7	9
	500	0	0	0	1	1	1	3	4	6	7
	600	0	0	0	1	1	1	2	3	5	6
	700	0	0	0	1	1	1	1	3	4	5
	750	0	0	0	1	1	1	1	3	4	5
	800	0	0	0	0	1	1	1	3	4	5
	900	0	0	0	0	1	1	1	2	3	4
	1000	0	0	0	0	1	1	1	2	3	4

Note: This table is for concentric stranded conductors only. For compact stranded conductors, Table C4(A) should be used.
*Types RHH, RHW, and RHW-2 without outer covering.

SOURCE: NEC2002

Table C8 Maximum Number of Conductors or Fixture Wires in Rigid Metal Conduit (RMC) (Based on Table 1, Chapter 9)

CONDUCTORS

Conductor		Metric Designator (Trade Size)											
Type	Size (AWG/kcmil)	16 (½)	21 (¾)	27 (1)	35 (1¼)	41 (1½)	53 (2)	63 (2½)	78 (3)	91 (3½)	103 (4)	129 (5)	155 (6)
RHH, RHW, RHW-2	14	4	7	12	21	28	46	66	102	136	176	276	398
	12	3	6	10	17	23	38	55	85	113	146	229	330
	10	3	5	8	14	19	31	44	68	91	118	185	267
	8	1	2	4	7	10	16	23	36	48	61	97	139
	6	1	1	3	6	8	13	18	29	38	49	77	112
	4	1	1	2	4	6	10	14	22	30	38	60	87
	3	1	1	2	4	5	9	12	19	26	34	53	76
	2	1	1	1	3	4	7	11	17	23	29	46	66
	1	0	1	1	1	3	5	7	11	15	19	30	44
	1/0	0	1	1	1	2	4	6	10	13	17	26	38
	2/0	0	1	1	1	2	4	5	8	11	14	23	33
	3/0	0	0	1	1	1	3	4	7	10	12	20	28
	4/0	0	0	1	1	1	3	4	6	8	11	17	24
	250	0	0	0	1	1	1	3	4	6	8	13	18
	300	0	0	0	1	1	1	2	4	5	7	11	16
	350	0	0	0	1	1	1	2	4	5	6	10	15
	400	0	0	0	1	1	1	1	3	4	6	9	13
	500	0	0	0	1	1	1	1	3	4	5	8	11
	600	0	0	0	0	1	1	1	2	3	4	6	9
	700	0	0	0	0	1	1	1	1	3	4	6	8
	750	0	0	0	0	0	1	1	1	3	3	5	8
	800	0	0	0	0	0	1	1	1	2	3	5	7
	900	0	0	0	0	0	1	1	1	2	3	5	7
	1000	0	0	0	0	0	1	1	1	1	3	4	6
TW, THHW, THW, THW-2	14	9	15	25	44	59	98	140	216	288	370	581	839
	12	7	12	19	33	45	75	107	165	221	284	446	644
	10	5	9	14	25	34	56	80	123	164	212	332	480
	8	3	5	8	14	19	31	44	68	91	118	185	267
RHH*, RHW*, RHW-2*	14	6	10	17	29	39	65	93	143	191	246	387	558
RHH*, RHW*, RHW-2*	12	5	8	13	23	32	52	75	115	154	198	311	448
	10	3	6	10	18	25	41	58	90	120	154	242	350
RHH*, RHW*, RHW-2*	8	1	4	6	11	15	24	35	54	72	92	145	209
RHH*,	6	1	3	5	8	11	18	27	41	55	71	111	160
RHW*, RHW-2*, TW, THW,	4	1	1	3	6	8	14	20	31	41	53	83	120
	3	1	1	3	5	7	12	17	26	35	45	71	103
	2	1	1	2	4	6	10	14	22	30	38	60	87
	1	1	1	1	3	4	7	10	15	21	27	42	61
THHW, THW-2	1/0	0	1	1	2	3	6	8	13	18	23	36	52
	2/0	0	1	1	2	3	5	7	11	15	19	31	44
	3/0	0	1	1	1	2	4	6	9	13	16	26	37
	4/0	0	0	1	1	1	3	5	8	10	14	21	31
	250	0	0	1	1	1	3	4	6	8	11	17	25
	300	0	0	1	1	1	2	3	5	7	9	15	22
	350	0	0	0	1	1	1	3	5	6	8	13	19
	400	0	0	0	1	1	1	3	4	6	7	12	17
	500	0	0	0	1	1	1	2	3	5	6	10	14
	600	0	0	0	1	1	1	1	3	4	5	8	12
	700	0	0	0	0	1	1	1	2	3	4	7	10
	750	0	0	0	0	1	1	1	2	3	4	7	10
	800	0	0	0	0	1	1	1	2	3	4	6	9
	900	0	0	0	0	1	1	1	1	3	4	6	8
	1000	0	0	0	0	0	1	1	1	2	3	5	8

SOURCE: NEC2002

Table C8 (Continued)

CONDUCTORS

Type	Conductor Size (AWG/kcmil)	Metric Designator (Trade Size) 16 (½)	21 (¾)	27 (1)	35 (1¼)	41 (1½)	53 (2)	63 (2½)	78 (3)	91 (3½)	103 (4)	129 (5)	155 (6)
THHN, THWN, THWN-2	14	13	22	36	63	85	140	200	309	412	531	833	1202
	12	9	16	26	46	62	102	146	225	301	387	608	877
	10	6	10	17	29	39	64	92	142	189	244	383	552
	8	3	6	9	16	22	37	53	82	109	140	221	318
	6	2	4	7	12	16	27	38	59	79	101	159	230
	4	1	2	4	7	10	16	23	36	48	62	98	141
	3	1	1	3	6	8	14	20	31	41	53	83	120
	2	1	1	3	5	7	11	17	26	34	44	70	100
	1	1	1	1	4	5	8	12	19	25	33	51	74
	1/0	1	1	1	3	4	7	10	16	21	27	43	63
	2/0	0	1	1	2	3	6	8	13	18	23	36	52
	3/0	0	1	1	1	3	5	7	11	15	19	30	43
	4/0	0	1	1	1	2	4	6	9	12	16	25	36
	250	0	0	1	1	1	3	5	7	10	13	20	29
	300	0	0	1	1	1	3	4	6	8	11	17	25
	350	0	0	1	1	1	2	3	5	7	10	15	22
	400	0	0	1	1	1	2	3	5	7	8	13	20
	500	0	0	0	1	1	1	2	4	5	7	11	16
	600	0	0	0	1	1	1	1	3	4	6	9	13
	700	0	0	0	1	1	1	1	3	4	5	8	11
	750	0	0	0	0	1	1	1	3	4	5	7	11
	800	0	0	0	0	1	1	1	2	3	4	7	10
	900	0	0	0	0	1	1	1	2	3	4	6	9
	1000	0	0	0	0	1	1	1	1	3	4	6	8

Note: This table is for concentric stranded conductors only. For compact stranded conductors, Table C8(A) should be used.
*Types RHH, RHW, and RHW-2 without outer covering.

SOURCE: NEC2002

Metric Conductors

Wire Size MM	Wire Size AWG	Circ Mils	# of Strands	Strand Diameter	Diameter MM	Diameter Inch	Color Code	Die Code
10	8	19,730	1	3.57	3.57	0.140	Red	21
10	8	19,730	7	1.35	4.05	0.159	Red	21
16	6	31,558	1	4.50	4.50	0.177	Blue	24
16	6	31,558	7	1.70	5.10	0.200	Blue	24
25	2	49,325	7	2.14	6.42	0.253	Gray	29
25	2	49,325	19	1.35	6.75	0.266	Brown	33
35	1	69,055	19	1.53	7.65	0.300	Green	37
50	1/0	98,650	19	1.78	8.90	0.350	Pink	42
70	2/0	138,110	19	2.14	10.70	0.421	Black	45
95	3/0	187,500	19	2.52	12.60	0.496	Orange	50
95	3/0	187,500	37	1.78	12.46	0.490	Orange	50
120	250	236,760	37	2.03	14.21	0.560	Purple	54
150	300	295,950	37	2.25	15.75	0.620	White	66
185		365,000	61	2.52	17.64	0.695	Red	71
240	500	473,500	61	2.25	20.25	0.797	Brown	87
300		591,900	61	2.52	22.68	0.893	Green	94
400		789,200	61	2.85	25.65	1.000	Black	106
400		789,200	91	2.36	25.96	1.022	Black	106
500		986,500	61	3.20	28.80	1.134		125
500		986,500	91	2.65	29.15	1.148		
630		1,243,000	127	2.52	32.76	1.290		
800		1,578,400	127	2.85	37.05	1.459		
1000		1,973,000	127	3.20	41.60	1.638		

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